# Fitting Electric Vehicles into the Grid

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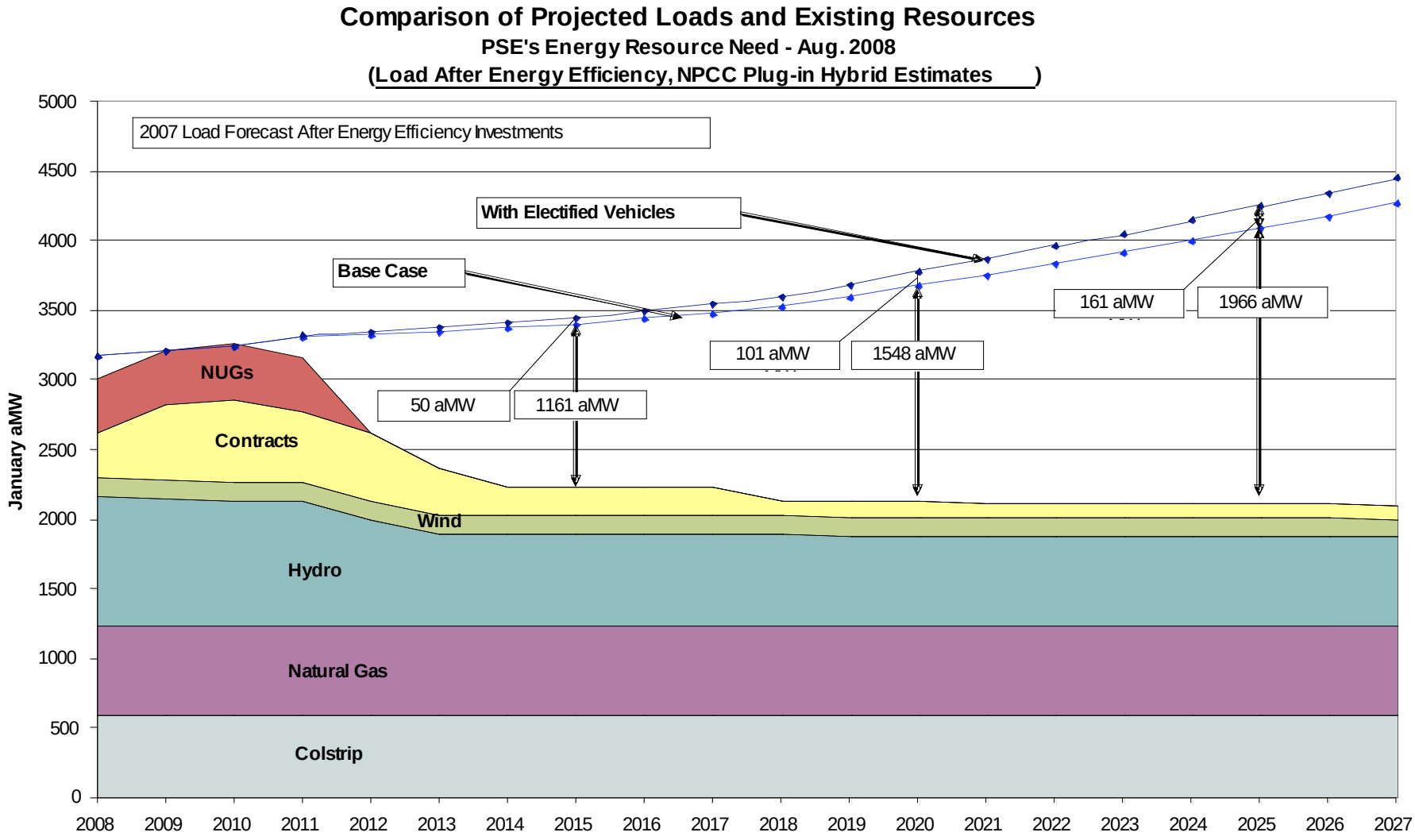
# Load Impacts – Passenger Vehicles and Light Trucks

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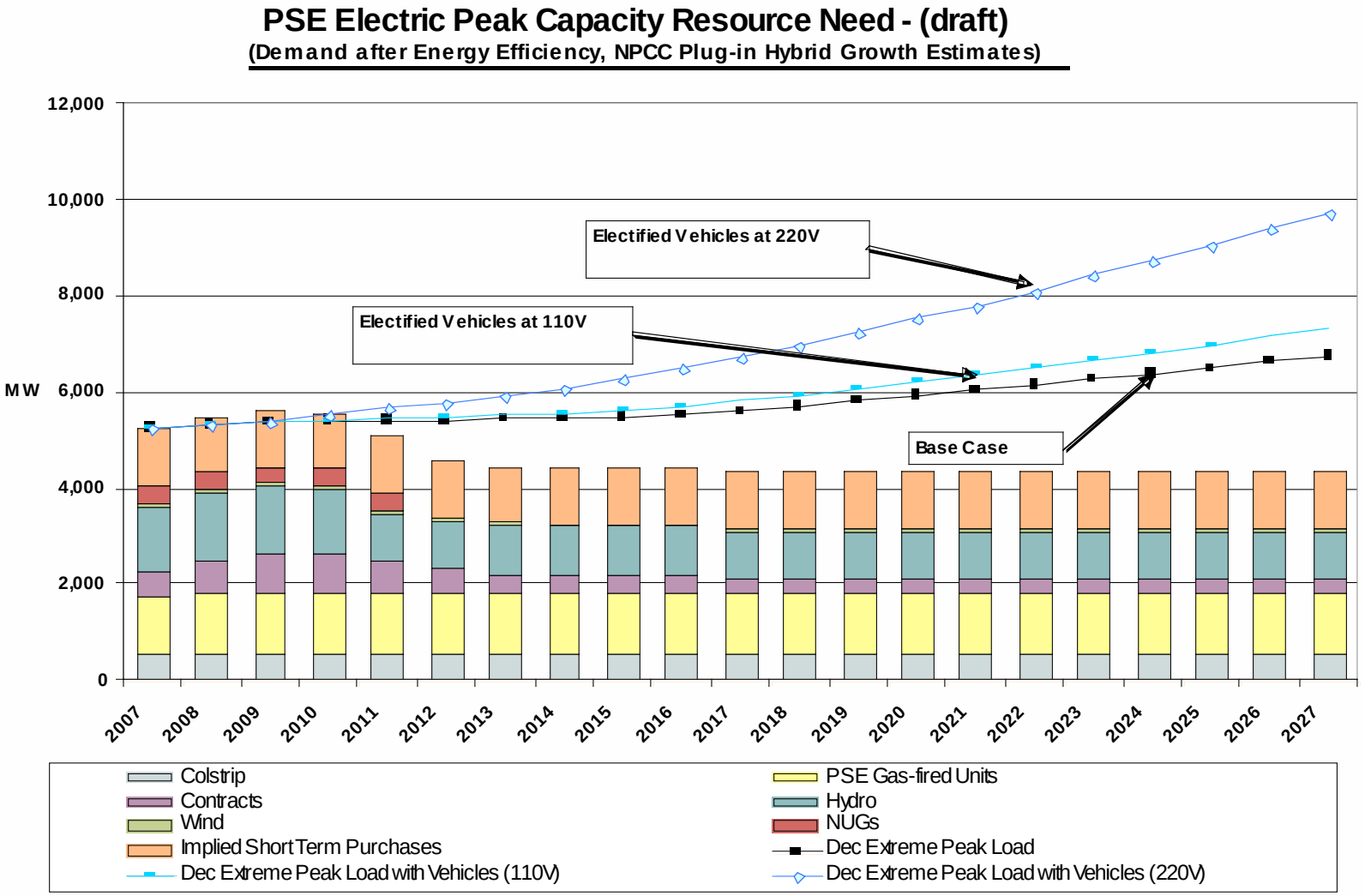
# Capacity Impacts – Passenger Vehicles and Light Trucks



# Distribution Impacts – Passenger Vehicles and Light Trucks

- 2007 Study of 10 PSE distribution feeders with Pacific Northwest National Labs
  - 110V Smart-charging
    - More than 2 vehicles per residential household can be supported
    - Lowest available penetration on one feeder is 0.75 vehicles
  - 220V Uncontrolled Charging
    - 1 vehicle per residential household can be supported
    - Lowest available penetration on one feeder is <0.25 vehicles

# PSE Fleet Pilot Project

- 2 plug-in hybrid Toyota Priuses in PSE Fleet
- Examine Use Patterns, Charge Behavior, Vehicle Performance
- Experiment with Charge Control Strategies
- Collaborative work with other pilot fleets in region

# Conclusions

- Existing electric system can support initial deployment of electrified transportation
- Collaboration between Transportation Planners, Utilities, Land Use Planners, and Air Agencies is required to plan infrastructure
- Consumer preferences, needs, and habits must be met to ensure adoption
- Benefits and Cost Treatment must be balanced

# END